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ABSTRACT

A study was conducted to identify the factors that influence adults to continue their education by taking formal course work on a part-time basis. Using May 1981 Current Population Survey data gathered by the Bureau of the Census, the study assessed the importance of price, socioeconomic characteristics, family income, and unemployment rates in determining adult participation in continuing education. Data from 11 urban areas, each with at least one community college and a variety of other private and public educational institutions, were analyzed. Study findings included the following: (1) approximately 11.3% of the black and white adults in the 11 areas were participating part time in continuing education activities, with enrollment rates lowest in east coast cities and highest in San Francisco (California); (2) for both men and women, prior education, age, and professional employment status were the most important factors distinguishing between participants and non-participants; (3) family income was estimated to be more important than price in determining the probability of enrollment for men, while the opposite pattern emerged for women; (4) a higher regional unemployment rate was a disincentive for male participation in career-related education; (5) attending school for personal enrichment was not associated with higher levels of educational attainment; and (6) women paid less for both career-related and personal-enrichment education than men. An 81-item bibliography is included. (UCM)

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Determinants of Part-Time Adult Student Participation in Education

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Introduction

During the last decade, the importance of part-time adult educational activities has emerged as a significant issue, both for higher education planners and in developing public policy directions. Public policy makers, concerned with economic stagnation and the dwindling competitiveness of the United States in world markets, have turned to education as a likely tool to use in enhancing the effectiveness of the United States worker. Education has also been perceived as a possible cure for long-term and structural unemployment problems. Higher education planners have become concerned with defining new populations to serve as a result of the demographic shifts which have substantially diminished the numbers of individuals in the age category traditionally associated with college attendance.

From both perspectives there is a need to understand the variables that relate to and influence adult participation in continuing education activities. This study involved an attempt to generate insights into the determinants of adult demand for education.

A meaningful examination of adult participation requires that it be examined in the context of the reason for participation. Numerous taxonomies describing adult participation in education have been developed. Examples include: Apt, 1978; Goodnow, 1982; Harrington, 1977; and Hyde, 1982. Typically these taxonomies can be collapsed into three major reasons for adult enrollment in educational programs: (1) to develop career-entry skills; (2) for career enhancement; and (3) for personal enrichment.

Individuals seeking career-entry skills can be frequently categorized as recent entrants to the labor market, with existing work experiences tending to be in low-status, low-skill-level tasks. Also included in the career-entry category are individuals attempting to train for an occupation after a sustained absence from the labor force, and those involuntarily

separated from a previous occupation due to economic retrenchment or obsolescence of job skills.

Career-enhancement educational activities were defined to be those that are undertaken to enhance skills in a current job, to improve chances for promotion, or to increase employment opportunities in or outside of a current field of employment. While some individuals may voluntarily sever employment ties to undertake career-enhancement educational activities, these educational pursuits most often occur while the individual continues employment. Career-enhancement activities are typically pursued for reasons of voluntary self-improvement, while career-entry educational activities tend to be carried out with a greater sense of need and urgency. The differences in individual's motivations for career-entry and career-enhancement educational activities suggests that the nature of the demand for educational programs in the two instances may be dissimilar.

The third adult participation category, personal enrichment, was defined to include any type of educational activity undertaken for purposes not related to one's occupational performance. Leisure, noncredit courses were included, as were standard credit courses taken for personal interest reasons.

A Micro-Economic Theory Framework for Looking at Adult Participation

Explanations of demand for a good or service are usually hypothesized to depend on the interaction of four factors or determinants: the consumer's tastes and attitudes; the consumer's income; the prices of alternative goods that might be purchased; and the consumer's expectations for the future regarding prices, other purchase alternatives, and their future income potential (Mansfield, 1970). Because education can be an investment good as well as a consumer good, the concept of consumer's expectations includes a consideration of the anticipated impact of future earnings.

Consumer Tastes and Attitudes

Consumer "tastes" for education have been consistently assumed by researchers to be associated with socio-economic factors in the consumer's background. Much of the limited research on adults in higher education has focused on the relationship between socio-economic variables and participation. Variables that have consistently emerged as useful in explaining participation include: age, sex, race, employment status, nature of employment, and previous levels of educational attainment (Anderson & Darkenwald, 1979; Apt, 1978; Bishop & VanDyk, 1977; Munday, 1976; Shipp & McKenzie, 1981).

Income

The relationship between income and adult educational participation is complicated for several reasons:

1. There are many alternative forms of income which can be argued to be appropriate: e.g., family income, individual income, disposable income, etc.

2. Income tends to be closely correlated with other variables that are strongly associated with participation such as prior education.

3. Because of the opportunity costs involved in educational pursuits, participants may reduce their income in the time period in which they are participating in education.

4. For a variety of reasons discussed in Mincer (1975) and Leibowitz (1975), women may respond differently to income than men in pursuing education.

5. The investment nature of some kinds of educational purchases suggest that current income may be less important than perceptions of impact on future income.

In general, the relationship between income and part-time adult study is problematic. Rising income levels may increase the willingness and ability to pay but reduce the perceived need for career education as the marginal benefit anticipated declines. Family income, adjusted to reflect costs of

employment such as child care, may be a more meaningful income measure than personal income, but probably it is not considered in the same way by males and females. Available research findings imply that adult subpopulations should be analyzed separately and that the choice of the income variable used may depend upon the characteristics of the subpopulation.

Prices of Other Goods and Services

The decision to purchase education is done within the context of other goods or services which an individual desires to purchase. It can be hypothesized that, as the costs of other items required or desired by the consumer rise, that participation in education will tend to diminish assuming other variables such as personal characteristics and income have been appropriately controlled.

Consumer Expectations for the Future

Many types of educational pursuits can be viewed as investments for the future which will have the potential to increase future income streams. To the extent that education is purchased under these assumptions, then a understanding of educational purchases must go beyond the current period characteristics of the adult to include the potential student's anticipation of net increases to future income.

Price

In economic theory, price plays a critical role. Once the nature of the consumer's demand for education has been set by the above determinants of the demand, the actual amount of education pursued will depend upon the price at which that education is available to the consumer. Adults have been found to be more price sensitive than traditional-age students. Munday (1976) drew this conclusion because adult registration patterns indicated a preference for public, low-cost two- and four-year colleges over private education opportunities. Anderson and Darkenwald (1979) found that

adult college attendance was much greater in the Western States, where public institutions' tuitions are lower than in the rest of the country. A similar finding was reported in a more recent study by Mohrman (1984). Bishop and VanDyk (1977) found greater price sensitivity in adults than in traditional-age populations. Hyde (1982) found that the greatest price sensitivity occurred in low socio-economic-status individuals.

Research Issues

The major question addressed by this study was: What factors influence the decisions of adults to continue their education by taking formal course work on a part-time basis? Specific questions posed included:

1. How important is price in determining adult participation in continuing-education activities?
2. Do different subpopulations, or persons pursuing education for different reasons, exhibit alternative levels of price sensitivity?
3. What socio-economic characteristics are strongly associated with adult educational participation and non-participation?
4. Do participants in various types of adult education programs exhibit different characteristics?
5. How important is current family income level to adult participation in continuing education?
6. How do changes in unemployment rates affect adult education participants?
7. What are the characteristics of adults choosing to enroll at the various sources of adult education programs?

Data Used for Study

This study was based on data compiled as a part of the May, 1981 "Current Population Survey" (CPS) conducted by the United States Bureau of Census. Every three years, the CPS includes a series of questions on adult continuing-education activities. The survey collects information on adults' educational activities during the year immediately proceeding

the survey date. In addition to information on the nature of the educational program and the reasons it was undertaken, the CPS data provide considerable background information on the individuals responding.

The study was "cross-sectional" in design. It looked at a sample of individuals in selected SMSA's at the time of the CPS. Discriminant analysis was the major statistical procedure used to identify differences in the various categories of adult continuing-education participants and non-participants.

Most of the data employed in the study were taken directly or derived from CPS data. A few additional variables for the SMSA were used, including unemployment rates, indices reflecting differences in family budgets in the SMSA's, and Consumer Price Indices. The SMSA's included in the study are listed below with the number of individuals included in the CPS sample.

SMSA	Number Responding	Percent of Sample Respondents
New York	3086	20.5
Chicago	2514	16.7
Philadelphia	1758	11.7
Detroit	1497	10.0
San Francisco	1122	7.5
Boston	1115	7.4
St. Louis	798	5.3
Baltimore	857	5.7
Cleveland	711	4.7
Houston	933	6.2
Miami	628	4.2
Total Sample	15,019	

Each of these SMSA's had at least one community college and a rich mix of other private and public educational opportunities for adults. Because these SMSA's were impacted unequally by the national economic stresses of the 1980-81 period and had somewhat different policies for tuition levels at publicly supported higher education institutions, their inclusion was intended to help test hypotheses related to the importance of price and economic conditions on adult participation.

Classification of Adult Participation

For the purpose of this study, adult, part-time students were defined to be individuals 19 years of age or older who indicated in the CPS that they were enrolled in an educational activity, but not as full-time students in a program requiring six months or more to complete.

Part-time adult students were sorted into the three educational goals categories by their responses to specific questions on the CPS survey. The following approach was used:

Personal-Enrichment Students - Responded to the CPS that educational activity was for one of the following reasons:

1. "To prepare for naturalization as an American Citizen."
2. "For general education."
3. "For personal and social reasons (such as community activity, home and family life, personal development, social and recreational interests)."
4. "To train for volunteer work."
5. "Other non-job-related reasons."

Career-Entry Students - Responded that education was for the following reason: "To train for an occupational field I have not worked in previously."

Career-Enhancement Students - Responded that education was for one of the following reasons:

1. "To improve, advance or keep up-to-date in my current job."
2. "To get a new job in my current occupation or in an occupation I have worked in previously."
3. "Other job-related reasons."

In addition to examining the characteristics of participants and non-participants, the characteristics of individuals using different providers of adult education were also examined. These sources were categorized as follows:

Two-Year Community or Junior Colleges or Technical Institutions

Four-Year Colleges or Universities

Business or Industry

Other - This category contained all other responses including: "elementary school or high school"; "vocational trade, business, hospital or flight school"; "other school"; "tutor or private instructor"; "labor organization or professional association"; "Federal, State, county or local government agency"; "private community organization"; "other (to be specified by respondent)."

Variables Used to Describe Participation

The following list of variables represents the data on individual participants and nonparticipants that were drawn from the CPS results. Several important variables were not available from the CPS data. Most notable was personal income, which was missing for a majority of the working respondents. For this reason, only income relationships related to family income were examined in the analyses. Sample size limitations also made it necessary to delete individuals with race codes other than black or white. Variables used included:

Last Year of Education Completed

Nature of Employment (Occupational Status)

--Low Skills (includes agricultural, private household, never worked, operatives, non-farm labor, and service workers)

--High Skills (includes craftsmen and kindred workers)

--Office Work (includes non-farm managers and administrators, sales workers, and clerical and kindred workers)

--Professional (includes professional, technical, and kindred workers)

Marital Status
--Married, Spouse Present
--Other

Individual's Employment Status
--Employed
--Not in Labor Market
--Idle, Looking for Work

Age of Participant

Race
--White
--Black

Reason for Undertaking Course Work
--Career Enhancement
--Career Entry
--Personal Enrichment

Family Income

Amount Paid per Course by Participant

Payment by Individual to Take Course
--Individual Paid to Take Course
--Individual Did Not Pay to Take Course

Employer, Government or Other Agency Paid for Part or All of Course
--Yes
--No

Instruction Provided by Employer
--Yes
--No

Veteran's Status
--Vietnam Era Veteran
--All Others

Location of Respondent's Residence
--In Center-City Portion of SMSA
--Elsewhere

Head-of-Household-with-Dependents Status
--Yes
--No

SMSA Variables

Three types of independent variables were used in this analysis. In addition to the individual respondent variables reported above, exogenous SMSA variables and endogenous SMSA variables were included. The exogenous variables were collected independently of the CPS data and reflected general SMSA characteristics. Included in this category were cost-of-living and general unemployment information. The

endogenous SMSA variables were SMSA characteristics estimated from the May 1981 CPS data. Included were median price paid by participants for various types of adult education courses and unemployment rate for individuals at different levels of educational attainment. The latter data was compiled to test the sensitivity of adult participation to differential risks of unemployment at various educational levels.

Description of Statistical Analyses and Results

Participation Patterns

Based upon the CPS sample, an estimated 11.3 percent of the black and white adults in the eleven SMSA's were participating in part-time continuing education activities. Participation was lowest in the east cost cities (with the exception of Baltimore) and highest in San Francisco where an estimated 23.5 percent of the black and white adult population participated. Participation patterns are shown in Table 1.

Statistical Procedure Employed

The results of four analyses are reported in this paper: (1) the differences between career-oriented participants and non-participants; (2) the differences between career-oriented and personal-enrichment participants; (3) the differences between career-enhancement and career-entry participants; and (4) the differences among users of various types of providers of adult education programs.

Philadelphia was excluded from the original data set. Variables found to be statistically significant were cross-validated for Philadelphia by using the results to attempt to categorize respondents in the Philadelphia SMSA sample.

TABLE-1

ESTIMATED NUMBER AND PERCENTAGE OF ADULTS PARTICIPATING IN FORMAL CONTINUING-EDUCATION ACTIVITIES BY SAMPLE SMSA's[1]

SMSA	Projected Number of Participants (000)	Projected Percentage of the Population Participating
New York	390	7.4
Chicago	532	11.6
Philadelphia	244	7.5
Detroit	332	12.0
San Francisco	466	23.5
Boston	133	7.6
St. Louis	186	12.8
Baltimore	212	15.0
Cleveland	192	15.0
Houston	240	13.8
Miami	79	7.0
Total Estimated Participants	3006	11.3

Source: Derived from May, 1981 CPS data.

[1] In this and all subsequent tables, adults attending school on a full-time basis and adults whose race status was other than black or white are excluded.

Relationship One - Identifying Variables That Distinguish Between Career-Oriented Participants and Non-Participants

For this relationship, variables were employed that were expected to differentiate non-participants from career-oriented participants. Individuals whose participation was identified as being for personal enrichment were eliminated from the data set.

Because of high correlation among a few variables, it was not possible to use some of the originally proposed variables at the same time. The three-year inflation rate was strongly and negatively correlated with the educational price variables. This created some fluctuations in the discriminant function coefficients, both in size and direction, when both inflation and educational price variables were included. Because of the importance of the price variables for this study, inflation was omitted. The definition of low-skill workers in the CPS, which included those with no work experience, meant that this variable was somewhat correlated with the variable, "not in the work force." These variables were not used at the same time in any of the four relationship analyzed.

To see the extent to which the relative cost of other items within the SMSA influenced participation, the income variable was entered in some analyses with an adjustment for the SMSA cost of living as measured by the budget value for a moderate life-style for a family of four. This adjustment proved not to make a difference to the results.

Occupational status was treated in two ways. Four occupational clusters were created: professional, office, high skills, and low skills. The exact categories of workers included in each group were

specified earlier. The groups were treated alternately as individual variables, or as one variable by numbering the groups 4, 3, 2 and 1, respectively. The latter approach was suggested by Baggaley and Hull (1983), whose research suggests that, when an ordinal sequence can be associated with the various levels possible for a variable, values assigned to those cases appear not to greatly affect the values of the coefficients obtained in multivariate approaches such as factor analysis and discriminant analysis. When the individual job-status variables were used, the high-skills group was deleted for analyses involving women and the low-skills group deleted for analyses involving men. This was done to reduce the inter-correlation among the grouping variables. Except where specifically noted, none of the results for any of the four relationships included grouping variables in the same functions with correlations higher than .4. This approach was taken to try to reduce the likelihood that the discriminant coefficients were not representative of the importance of the variable to the relationship due to its correlation with another variable entered in the analyses. In cases where variables were not used at the same time, repeated discriminant analyses were undertaken to find the best combination of variables.

Results - Relationship One

Tables 2 and 3 present the results of the discriminant analyses for men and women respectively. These results were achieved using a step-wise discriminant analysis approach, using Wilks' lambda as the criteria for variable selection. Variables were allowed to be entered into the discriminant function as long as the probability of significance entered was

greater than .8. To see the extent to which the discriminant functions could correctly categorize the cases under alternative assumptions about prior probability of classification, the discriminant classifications were conducted with prior probabilities set at .5.

All coefficient signs were consistent with the original hypotheses. For both men and women, prior education, age, and professional employment status were the most important variables distinguishing between participants and non-participants. For women, current employment was an important factor in explaining participation. For men, the currently employed status did not make a significant contribution to the equation. Unemployment was a deterrent to male participation and an incentive for female participation. Being black was associated with non-participation for both men and women, but it was more important for men. Head-of-the-household status with responsibilities for others was a positive factor in male attendance but not for women. Married women living with their spouses were found to be less likely to attend than unattached women.

Family income was estimated to be more important than price in determining the probability of enrollment for men, while the opposite pattern emerged for women. However, for both sexes, the price and income variables were found to be less important than other personal characteristics.

TABLE 2

VARIABLES SELECTED FOR INCLUSION TO DISCRIMINATE BETWEEN NON-PARTICIPANTS AND CAREER-ORIENTED PARTICIPANTS WITH STANDARDIZED CANONICAL DISCRIMINANT FUNCTION COEFFICIENTS, RELATED STATISTICS, AND CLASSIFICATION RESULTS FOR PHILADELPHIA

MEN

Variable	Standardized Discriminant Coefficient	F to Remove
Last Year of Education Finished	.553	79.4
Age	-.453	53.7
Professional Employment Status	.338	31.7
Race	-.164	8.0
High-Skill Craft Employment Status	.157	7.1
Unemployed	-.145	6.3
Family Income	.111	3.4
Head of Household Status	.102	2.8
Unemployment Ratio	.097	2.9
Median Price	-.093	2.7

Sample Size	4178
Canonical Correlation	.274
Chi-Squared Value	326
Significance	P < .0001
Percent of Participants Correctly Classified	74.8
Percent of Philadelphia Participants Correctly Classified	72.0
Percent of Total Cases Correctly Classified	73.7
Percent of Total Philadelphia Cases Correctly Classified	82.1

TABLE 3

VARIABLES SELECTED FOR INCLUSION TO DISCRIMINATE BETWEEN NON-PARTICIPANTS AND CAREER-ORIENTED PARTICIPANTS WITH STANDARDIZED CANONICAL DISCRIMINANT FUNCTION COEFFICIENTS, RELATED STATISTICS AND CLASSIFICATION RESULTS FOR PHILADELPHIA

WOMEN

Variable	Standardized Discriminant Coefficient	F to Remove
Professional Employment Status	.598	143.7
Last Year of Education Finished	.360	63.7
Currently Employed	.300	32.4
Age	-.241	27.8
Wife (Spouse Present)	-.153	12.5
Race	-.151	12.4
Unemployed	.143	10.3
Office Worker Employment Status	.141	6.5
Median Price	-.114	7.6
Unemployment Ratio	.097	5.5
Family Income	.088	6.5

Sample Size	5173
Canonical Correlation	.341
Chi-Squared Value	637
Significance	P < .0001
Percent of Participants Correctly Classified	62.5
Percent of Philadelphia Participants Correctly Classified	41.7
Percent of Total Cases Correctly Classified	83.7
Percent of Total Philadelphia Cases Correctly Classified	87.8

Relationship Two - Identifying Variables That Distinguish Between Career-Oriented Participants and Personal-Enrichment Participants

The goal for this analysis was to seek variables that distinguish between participants in personal-enrichment activities and career-related education. As in the first relationship, the grouping variable was dichotomous, with career-oriented students being coded as two and personal-enrichment students coded as one. Separate analyses were conducted for men and women. Because the distinction between personal and career-related educational activities has not been made in most studies of adult students, there was not a strong research base on which to formulate hypotheses on variables to differentiate between the two categories of participants. Generally, it was hypothesized that attenders of personal-enrichment courses would tend to be older, more affluent, and better educated. Several variables were introduced that were hypothesized to have a weak or insignificant impact. Race, in particular, was not expected to be a significant factor.

Results - Relationship Two

Tables 4 and 5 present the results of the most successful equations for men and women. For both sexes, payment for the course by employer was the most important discriminating variable between personal-enrichment and career-related participation. This result probably reflects the requirement by many employers that subsidized continuing education being job related. For men, the amount paid and the employer being the source of the course were the next most important factors identified. The only occupational status variable important for men was high-skills craft

employment which was positively associated with career-related employment. A higher SMSA unemployment rate was a disincentive for male participation in career-related education as was the circumstance of not being in the labor force.

After employer subsidization, the most important factor identified for women was a not-in-the-labor-force status which was negatively associated with career-related education. The amount paid for the course and the employer being the source of the course were both discriminating factors for women, but they appeared to be relatively less important. Unemployment status was positively associated with career-related education for women. Also having head-of-the-household status was found to be a positive incentive for career-related education. Age appeared to be slightly less important for women than for men in discriminating between career-related and personal-enrichment education. Higher levels of prior education were associated with more involvement in career education for men and women, but they were a less important factor for women. This may reflect the relatively high correlation of .367 for women between last year of education finished and professional employment status.

Neither race nor family income was identified in any of these analyses as significant discriminating variables for either men or women. None of the subsidized payment variables were found to be significant for discrimination purposes except the employer subsidy variable. For the SMSA's used to compute the discriminant functions, the ability to correctly classify the participants was essentially the same for both men and women. However, in cross-validating the results in the Philadelphia SMSA, the

equation for men was less successful than the one for women. Contrary to the original hypotheses, personal-enrichment education was not associated with higher levels of educational attainment. To the extent that a pattern could be discerned, it was for personal-enrichment students to come from backgrounds of lower family income and less enrichment. This finding may reflect the construction of the personal-enrichment category which may have been broader than desirable for this analysis.

TABLE 4

VARIABLES SELECTED FOR INCLUSION TO DISCRIMINATE BETWEEN PERSONAL-ENRICHMENT PARTICIPANTS AND CAREER-ORIENTED PARTICIPANTS WITH STANDARDIZED DISCRIMINANT COEFFICIENTS, RELATED STATISTICS, AND CLASSIFICATION RESULTS FOR PHILADELPHIA

MALE RESPONDENTS

Variable	Standardized Discriminant Coefficient	F to Remove
Employer Paid Part or All of Course Costs	.676	53.0
Amount Paid for Course	.346	19.8
Not Currently in Labor Force	-.259	14.5
Employer Source of Course	.333	12.6
Age	-.149	3.6
SMSA Unemployment Rate	-.131	3.0
Last Year of Education Completed	.130	2.8
High Skills Employment Status	.128	2.7
Sample Size	624	
Canonical Correlation	.535	
Chi-Squared Value	208	
Significance	P < .0001	
Percent of Participants Correctly Classified	72.8	
Percent of Philadelphia Participants Correctly Classified	67.9	

TABLE 5

VARIABLES SELECTED FOR INCLUSION TO DISCRIMINATE BETWEEN PERSONAL-ENRICHMENT PARTICIPANTS AND CAREER-ORIENTED PARTICIPANTS WITH STANDARDIZED DISCRIMINANT COEFFICIENTS, RELATED STATISTICS, AND CLASSIFICATION RESULTS FOR PHILADELPHIA

FEMALE RESPONDENTS

Variable	Standardized Discriminant Coefficient	F to Remove
Employer Paid Part or All of Course Costs	.681	79.0
Not Currently in Labor Force	-.278	18.1
Employer Source of Course	.231	8.7
Amount Paid for Course	.203	10.8
Professional Employment Status	.172	6.5
Head of Household Status	.124	4.1
Age	-.118	3.6
Unemployed	.117	3.6
Last Year of Education Finished	.087	1.8

Sample Size	881
Canonical Correlation	.557
Chi-Squared Value	325
Significance	P < .0001
Percent of Participants Correctly Classified	73.1
Percent of Philadelphia Participants Correctly Classified	77.9

Relationship Three - Identifying Variables That Distinguish Between Career-Enhancement and Career-Entry Participants

The purpose of this analysis was to determine differences between career-entry and career-enhancement students. As before, a step-wise, discriminant analysis approach was used. The group variable was dichotomous, with career-entry students coded as one and career-enhancement students coded as two. Because of the limited number of cases in the sample SMSA's, rather than conducting separate analyses for men and women, sex was introduced as a grouping variable. In general, it was hypothesized that career-enhancement students were willing to pay more for continuing-education activities. They were expected to use four-year and employer-based programs. Career-entry students were expected to be drawn to lower-cost options such as those provided by community colleges. Increases in the general unemployment and inflation rates were expected to encourage career-entry education as more individuals were forced into seeking employment. Neither race nor sex was expected to be of great importance in distinguishing participants in the two categories. Increases in occupational status, educational attainment, income, and age were all expected to be associated with career-enhancement education.

Results - Relationship Three

Table 6 presents the results of the most successful equation identified to describe the patterns emerging in relationship three. Of the source variables, the only one emerging as significant was two-year colleges as a source which was positively associated with career-entry education. The two most

important factors contributing positively to career-enhancement education were age and employer subsidies for the educational effort. Also important were professional employment status and prior educational accomplishment.

The most important factor associated directly with career-entry students was currently not being in the labor force. Being unemployed did not emerge as a significant factor. Government subsidization was positively associated with career-entry student status.

The amount paid for education was positively associated with participation in career-entry education. This occurred despite confirming evidence in the sample that incomes for these participants were lower. Several possibilities were suggested by this finding. Because of the expected anticipated rate of return on their educational investment, adults may have been willing to dedicate a higher percentage of their income to education conceived to be an investment. A second consideration is that the supply of educational opportunities was different for potential career-entry education than for career-enhancement students. Most notably, career-entry students can be assumed to have had restrictions on their access to low-cost employer-subsidized educational opportunities. Because of other variables positively associated with career-entry (attendance at typically low-cost two-year colleges and government subsidy), the lack of low-cost opportunities for career-entry education must be considered to be a potential barrier to enrollments in this area.

None of the variables, sex, race or being currently unemployed emerged as a significant discriminator suggesting that none of these groups was especially predisposed to use career-entry education to

improve their labor market standing. Taken positively, this implies equal access to career-entry education sources. The less-positive interpretation of this finding is that blacks who are tremendously overrepresented in the unemployment percentages, and should therefore ideally be overrepresented in the career-entry education to create additional labor market opportunities, are not using this option as fully as might be desired.

TABLE 6

VARIABLES SELECTED FOR INCLUSION TO DISCRIMINATE BETWEEN CAREER-ENTRY AND CAREER-ENHANCEMENT STUDENTS WITH STANDARDIZED CANONICAL DISCRIMINANT FUNCTION COEFFICIENTS, RELATED STATISTICS, AND CLASSIFICATION RESULTS FOR PHILADELPHIA

Variable	Standardized Discriminant Coefficient	F to Remove
Employer Paid Part or All of Course Costs	.480	41.2
Age	.450	39.5
Not Currently in Labor Force	-.442	37.1
Amount Paid	-.312	17.9
Professional Employment Status	.234	9.5
Government Paid Part or All of Course Costs	-.230	9.9
Two-Year College Source of Course	-.195	6.7
Last Year of Education Finished	.120	2.5

Sample Size	860
Canonical Correlation	.476
Chi-Squared	219
Significance	P < .0001
Percentage Career-Entry Students Correctly Classified	71.8
Percentage Career-Enhancement Students Correctly Classified	80.9
Percentage of Philadelphia Career-Entry Students Correctly Classified	54.5
Percentage of Philadelphia Career-Enhancement Correctly Classified	74.2

Relationship Four - Identifying the Variables That Distinguish Among Attenders at the Four Sources of Adult-Education Programs

The last relationship examined in this study involved an attempt to identify the factors contributing to an individual's decision to enroll in one of the four sources of adult-education programs. For the purposes of this analysis, the adult-education sources were categorized by a polychotimous variable in the following fashion: 1 - two-year college, 2 - four-year college, 3 - business/industry, 4 - other source.

Results - Relationship Four

Within the sample, adult participants were distributed by source of educational programs as follows:

	Number	Percent of Total
Two-year College	290	19.3
Four-year College	258	17.1
Business and Industry	198	13.2
Other Sources	759	50.4

These categories constituted the group variable for the analysis. Three discriminant functions are possible with four groups and, for this analysis, all three proved to be statistically significant. The summary statistics for the three functions are shown in Table 7. As indicated, the first function is more than three times as important as the second or third. The contributions made by each function to the discrimination among users of the four sources is partially indicated by the group centroids for each function reported in Table 8. The first function provided the most separation between users of two-year colleges and business and industry program. The second function had a group mean for four-year college users that was different for the means for the other groups. The last function had smaller group mean differences with the largest separation occurring for two-year colleges. The "other" source group did not exhibit a large mean difference from the other groups on any of the

functions, although function three was relatively more successful.

To describe the relationship between the individual variables and the functions, the structure coefficients are presented in Table 9. The structure coefficients represent the partial correlations between the individual grouping variables and the discriminant function. The structure coefficient show the relative importance of each variable for each function without concern about distortions to discriminant coefficients caused by correlation among grouping variables (Klecka, 1980).

Table 10 provides the standardized discriminant coefficients for the four group discriminant analysis. Because the occupational employment status variables tended to have fairly high intercorrelations ($r >$ than .5), the relative magnitudes of values for those variables must be interpreted cautiously. Similarly, the two price variables selected (median two-year and "other" source costs) had a correlation of .67.

The discriminant coefficients for the first function suggest the most important variables in differentiating between two-year and business and industry programs were employer being the source of program, government subsidization of course, individual payment of all costs, enrollment for career-enhancement, sex, current employment status, and low-skills employment status.

The second function, which differentiated four-year college users from all other categories of participants, had the largest standardized coefficients for the following variables: employer source of course, employer subsidization of course, location of residence, professional employment status, high-skills occupational status, SMSA median price for two-year colleges, and individual payment of some or all costs of attendance.

The third function which was most important for distinguishing other-source users from two-year college users

had the largest discriminant coefficients for the following: age, SMSA median price for two-year colleges, enrolled for personal enrichment, enrolled for career-enhancement, employer subsidization of course, government subsidization of course, currently employed status, SMSA unemployment rate, low-skills status, individual paid all costs, employer is a source of the course, and professional employment status. The results for this equation must be interpreted cautiously with the understanding that only a small percent of the total discrimination (14.9%) can be attributed to this function.

The classification results for the discriminant analysis are shown in Table 11. The group most readily identified in the cases used for the computations were the business and industry users, followed by four-year and two-year users. As expected from the results, other-source users were the most difficult to classify. Overall, it was possible to correctly classify 50.8% of the cases. The cross-validation for Philadelphia resulted in a slightly higher percentage of correct classifications (54.1%). However, the results were different. The equations did not serve to identify two-year college users in Philadelphia beyond that which would have occurred by chance.

TABLE 7

SUMMARY STATISTICS FOR THE RESULTS OF DISCRIMINANT ANALYSIS TO IDENTIFY DIFFERENTIATING CHARACTERISTICS OF THE USERS OF THE FOUR SOURCES OF ADULT EDUCATION PROGRAM

Function	Percent of Discrimination Attributable to Function	Canonical Correlation	Wilks' Lambda	Chi-Squared	Significance
1	65.9	.561	.547	400	P < .001
2	19.2	.344	.799	336	P < .001
3	14.9	.307	.906	148	P < .001

TABLE 8

GROUP CENTROIDS (DISCRIMINANT FUNCTIONS EVALUATED AT GROUP MEANS) FOR THE THREE DISCRIMINANT FUNCTIONS FOR USERS OF ADULT EDUCATION SOURCES

Group	Group Centroids		
	Function One	Function Two	Function Three
Two-Year College Users	-.688	-.250	-.528
Four-Year College Users	-.070	.799	-.076
Business Program Users	1.646	-.154	-.232
"Other" Source Users	-.142	-.136	.288

TABLE 9

STRUCTURE COEFFICIENTS FOR THE THREE DISCRIMINANT FUNCTIONS DERIVED FOR THE USERS OF ADULT EDUCATION SOURCES LISTED BY MAGNITUDE OF CORRELATION WITH MOST CLOSELY ASSOCIATED FUNCTION[1]

Variable	Function One	Function Two	Function Three
Employer Source of Course	0.85062	-0.19370	-0.12577
Employer Pays All or Some Costs	0.66223	0.19177	-0.37216
Enrolled for Career Enhancement	0.45711	0.26029	-0.25953
Individual Paid All Costs	0.39325	-0.11590	-0.19909
Government Paid Some Costs	-0.26290	-0.23070	-0.18918
Sex	-0.21180	-0.11044	0.08404
Head of Household Status	0.12561	0.01951	-0.02283
Wife Status	-0.11812	-0.11724	0.08989
Last Year of Education Completed	0.06661	0.55501	-0.05593
Professional Employment Status	0.10547	0.54039	0.00718
Occupational Status	0.10072	0.44669	-0.01883
Low-Skills Employment Status	-0.25393	-0.37687	0.33468
Median SMSA Price	0.01249	0.27158	0.23010
SMSA Inflation Rate	-0.01793	-0.24501	-0.15670
Office Worker Status	-0.07571	-0.24311	-0.02909
SMSA Median Price of Four-Year Colleges	0.00195	0.24070	0.19816
SMSA Median Price - "Other" Sources	0.01375	0.23058	0.21386
Amount Individual Paid	-0.08018	0.22841	0.17618
High-Skills Occupational Status	0.10914	-0.22046	0.01083
Relative Unemployment Ratio	0.03341	0.08264	-0.01190

TABLE 9 continued

Variable	Function One	Function Two	Function Three
Age	0.01964	-0.18809	0.51084
Enrolled for Personal Enrichment	-0.37342	-0.23268	0.43530
Not in Labor Force	-0.17355	-0.29377	0.36740
SMSA Median Price - Two-Year	0.02158	0.35237	0.35358
Currently Employed	0.14946	0.26909	-0.35196
Location of Residence	0.00326	-0.29596	-0.35196
Enrolled for Career Entry	-0.13658	-0.04501	-0.28748
SMSA Unemployment Rate	-0.03586	0.09932	0.25458
Veteran's Status	0.03974	0.11211	-0.19696
Race	-0.04998	0.02904	0.08017
Currently Unemployed	0.02021	0.00082	0.03098

[1] Variables in the first section of the chart were most correlated with the first function, those in the second part with the second function, and those in the third part with the third function.

TABLE 10

STANDARDIZED DISCRIMINANT COEFFICIENTS FOR THE THREE DISCRIMINANT FUNCTIONS DERIVED FOR THE USERS OF ADULT EDUCATION SOURCES

Variable	Function One	Function Two	Function Three
Age	0.06953	-0.10860	0.42370
Veteran's Status	-0.03956	0.11672	-0.18000
Last Year of Education Completed	-0.01291	0.39528	0.04638
Location of Residence	0.00391	-0.38528	0.04638
Currently Employed	-0.16559	-0.00936	-0.32291
Sex	-0.16559	-0.00936	-0.10381
Professional Employment Status	0.04860	0.31482	0.23038
High-Skills Occupational Status	0.00833	-0.20665	0.17405
Low-Skills Employment Status	-0.13682	-0.13277	0.27481
SMSA Unemployment Rate	0.05142	0.15693	0.29852
SMSA Median Price - Two-Year Colleges	-0.02828	0.34141	0.44368
SMSA Median Price - "Other" Sources	0.08203	-0.13561	-0.24549
Amount Individual Paid	0.02667	0.12402	0.17281
Employer Source of Course	0.77688	-0.45565	0.26752
Employer Pays All or Some Costs	0.02141	0.49328	-0.47573
Individual Paid All Costs	0.27850	-0.20105	0.28769
Government Paid Some Costs	-0.49847	-0.05254	-0.30773
Enrolled for Personal Enrichment	0.09509	-0.05257	0.55165
Enrolled for Career Enhancement	0.15991	0.06425	0.32754

TABLE 11

CLASSIFICATION RESULTS FOR THE THREE DISCRIMINANT FUNCTIONS DERIVED FOR THE USERS OF ADULT EDUCATION SOURCES - RESULTS FOR BOTH CASES USED IN ANALYSIS AND CROSS-VALIDATION FOR PHILADELPHIA SMSA[1]

Actual Group	Percent Predicted in Group			
	Two-Year Colleges	Four-Year Colleges	Business/ Industry	Other
Two-Year Colleges	59.7 (21.4)	17.6 (35.7)	4.5 (0)	18.3 (42.9)
Four-Year Colleges	12.4 (0)	58.5 (63.6)	13.6 (13.6)	15.5 (22.7)
Business/ Industry	7.6 (0)	15.2 (19.2)	74.2 (73.1)	3.0 (7.7)
"Other"	23.7 (5.6)	22.1 (36.6)	15.5 (7.0)	38.6 (50.7)

[1] Predicted percentages for the cross-validation of results for Philadelphia SMSA are shown in parentheses.

Summary of Findings and Implications

Great variability in adult-participation rates were reported by the sample respondents among the SMSA's included in the study. Lowest participation rates occurred in the four East Coast cities included in the study. Higher participation rates occurred in the Midwest and Western states, with the highest reported participation rate occurring on the West Coast in the San Francisco SMSA. Differences in SMSA participation rates were consistent with the study hypotheses that SMSA variables such as price structures for education and unemployment conditions influenced participation, in addition to the individual characteristics of SMSA residents. But, while both regional and individual variables did emerge as significant discriminators, individual characteristics were generally much more important in predicting participation.

Price

Because of the approach required to estimate the prices of educational opportunities in the SMSA's, it was not possible to describe fully the degree of adult sensitivity to prices. However, some important patterns did emerge from the data:

1. Women appeared to consider price more heavily than men in determining whether or not to participate. In most of the discriminant analyses, the median SMSA price for educational opportunity had a larger, negative impact on enrollment for women than it did for men. In determining sensitivity to price changes, women were also estimated to respond more strongly to price changes.

2. Women, on the average, paid less for education than men did, for both career-related and personal-enrichment education. Men paid a mean price of $71 for personal-enrichment education and $106 for career-related education. The corresponding values for women were $53 and $88.

3. Both men and women paid less on the average for personal-enrichment education than they did for career-related education.

4. Contrary to the original hypotheses, the amount paid for career-entry education was significantly higher than that paid for career-enhancement education. The mean amount paid for a career-entry course was $246, while the mean amount paid for a career-enhancement course was $68. Two explanations are suggested: (1) the potential economic gain may have been perceived to be higher for career-entry education, resulting in a willingness to pay more; or (2) the set of educational opportunities may have been different for career-enhancement students, providing them with greater access to less expensive sources of education. The high correlation between employer subsidization of the course and career-enhancement as reason for enrolling supports the second explanation. However, both explanations probably have some validity.

5. The prices of other goods and services as measured by general SMSA inflation rates were found not to have a strong influence on the decision to enroll in adult education. While career-related education participation, especially that for purposes of career enhancement, seemed to be lessened by greater inflation in living costs, none of the findings related to SMSA inflation rates were found to be statistically significant.

6. The data confirmed the tendency for lower socio-economic-status individuals to pursue lower-priced educational opportunities. Individuals with lower occupational status and family income used two-year and "other" sources with greater frequency than did the general population. On a non-subsidized basis, two-year or "other" sources were generally lower-cost options than four-year college attendance in each of the SMSA's. The "other" sources were especially important to the individuals not in the labor force or employed in low-skills occupations. While business and industry programs were frequently provided at low cost, access to these programs would have been seriously restricted for low-income individuals.

7. The importance of price in career-entry educational decision-making is reflected in the importance of

two-year college attendance and governmental subsidization of costs with that attendance decision.

The findings from this study emphasize the importance that price plays in adults' enrollment decisions. The opportunities for access to the lowest-cost educational opportunities seem not to be equal, and individuals whose participation would be of great personal and societal benefit are excluded or forced to pay much more for education than individuals already in a favored economic situation.

Tastes and Attitudes

The findings on tastes and attitudes toward education were generally consistent with the study hypotheses. However, several relationships were not as strong as originally anticipated. Tastes and attitudes could be measured only indirectly, based upon an assumed relationship with the socio-economic variables that were available. The lack of significance for some of the variables reflects the heterogeneity of respondents in the variable categories and the obvious circumstance that individual attitudes cannot be measured well by broad categorical variables. Nonetheless, some important patterns did emerge:

1. Head-of-house status, with a responsibility for at least one dependent, was positively associated with male, but not female, participation in career-related education. Married women living with their husbands were less likely to enroll in career-related education than other women. For women who chose to participate, head-of-house status was associated with career-related as opposed to personal-enrichment education. For all adults, head-of-house status was more closely associated with career-enhancement than career-entry education. Heads-of-house were relatively more likely to be enrolled in four-year colleges and business/industry programs. However, the head-of-household variable was not of great importance to most relationships.

2. Increasing age was associated with non-participation in career-related education for both men and women, but was less important as a factor for women. Both men and women involved in personal-enrichment education were found to be older than those involved in career-related education. Women in both categories were on the average older, and the importance of age for women in distinguishing between the two categories appeared to be less important. Career-entry students were, not surprisingly, much younger than career-enhancement students.

3. Career-entry education was associated relatively more frequently with women, and career-enhancement education with men.

4. Non-participation was found to be associated with having a black race status. But racial status was not an important consideration in distinguishing between personal-enrichment and career-education students. Race was not selected as a significant discriminating factor in distinguishing the two categories of career-education participants, nor was race a factor in identifying users of the four sources of adult education.

5. Prior levels of educational achievement were strongly and positively associated with participation in career-related education. Personal-enrichment students were found to be less well-educated than career-related students, but the educational factor was less important in this discrimination. Career-entry students were slightly less well-educated than career-enhancement students, but were significantly better educated than the non-participants.

6. Professional and high-skills craft workers were found to be most involved in career-related education. Office workers, which included the manager category, were significantly under-represented, as were low-skills workers (including individuals not in the labor force). Low-skills and office workers were over-represented in personal-enrichment education. The opposite patterns were true for high-skills and professional workers.

7. The variables strongly associated with enrollment in business and industry programs suggest that employer-based programs did encourage enrollments by individuals who might not otherwise have participated in an adult education program. Factors such as age and prior level of education were not important, while employer-related variables were very important.

8. Some personal characteristics do appear to have influenced the choice of adult-education program. Men were much more likely than women to use business/industry programs and somewhat more likely to use four-year college programs. Women were more likely to use two-year and "other" sources than men. Younger students were drawn to two-year and four-year college programs, while older students tended to use business/industry and "other" sources. The most-educated adults chose to enroll relatively more often in four-year colleges, while the least educated enrolled relatively more often in two-year colleges. Professional workers were most likely to enroll in four-year colleges. Office workers enrolled most commonly in two-year and "other" source programs. The high-skills craft workers were found most commonly in business and industry programs. Low-skills workers (including those not in the labor force) enrolled most frequently at "other" sources and two-year colleges. Married women were over-represented among non-participants and personal-enrichment students. They were also over-represented in the "other" source and two-year college students.

In general, the data involving tastes and attitudes toward education suggest that those who have benefitted from education in the past and those who have already achieved some economic success are those most likely to enroll in adult-education activities. Non-participants are older, less well-educated, more black, and have lower employment status than any of the categories of adult-education participants. The only exception to this was the career-entry category, in which black women are represented with more relative frequency than they are in the non-participant category.

Income

Because of the lack of a personal income variable, the findings with respect to income are not complete. The findings in this study echo earlier research findings that consistently concluded that adult students, as a class, tend to be more affluent than those who do not participate. Among the findings were the following:

1. For both men and women, family income for non-participants was significantly lower than for any class of the participants. Even career-entry students came from families whose mean family income was several thousand dollars larger than non-participants.

2. Rising family income was positively associated with both men's and women's participation in career education. However, income was consistently found to be less important as a factor than age, prior education, occupational status, and employment status. Income appeared to be slightly more important as a factor for men than women in influencing enrollment in career education.

3. Family income was not a significant factor for either men or women in distinguishing between personal-enrichment and career-related students.

4. As expected, career-entry students were from families with lower incomes than career-enhancement students. However, once other factors such as employment status and age were considered, family income did not emerge as a significant discriminating factor.

5. Income was not identified as an important discriminator among users of the different educational sources, but was most useful in distinguishing two-year college students who had the lowest average family income.

The findings for family income were consistent with those reported in the previous section. Individuals from low-income families where willingness to pay for education would most likely emerge as a concern were the least likely to participate. However, the group that paid the least on

the average for adult-education courses, business and industry users, came from the most affluent families. The existing adult-education program opportunities appears to have discouraged enrollment by those who might have benefitted the most--the low-income individuals. There was not evidence to suggest that career-entry students typically came from below-average-income family backgrounds. Nor did the two-year colleges serve individuals who as a group came from the lowest family income segments of the SMSA's.

Investment Aspects of Educational Purchases

Within the CPS sample, 56.8 percent of the adult students stated that they were enrolled for career-related reasons. It is highly probable that many of the students enrolled for reasons characterized in this study as "personal enrichment" were actually intending to use their educational attainments as a basis to improve their employment circumstances.

The original aspiration for this study was to determine the extent to which apparent differences in the income benefits from educational participation for various individuals would influence their attendance decisions. Failure to obtain usable values for personal income resulted in the findings being less complete than desired--nonetheless some patterns did emerge.

1. For both men and women, the extent of the discrepancy between the unemployment rate for the less-educated and more-educated was identified as a contributing factor to participation in career-related education. This finding implies that adults enroll in education, in part, to reduce their risk of future problems with unemployment.

2. The evidence on the unemployment and educational participation was different for men and women. Unemployment status clearly discouraged male enrollments, suggesting that ability-to-pay considerations outweighed economic benefit

possibilities for unemployed males. Unemployed females, however, were somewhat more likely to participate in career education than their employed female counterparts.

3. Unemployment status for an individual did not emerge as an important factor for distinguishing between career-entry and career-enhancement education. This suggests that, at least in the short-run, unemployment status was not be viewed as an important catalyst for adult career changes through re-education.

4. Unemployment status for an individual was not associated with greater probability of enrollment at any of the four sources of adult education.

5. The SMSA unemployment rates had a somewhat different relationship with participation than anticipated. For both men and women, increased unemployment rates in the SMSA were weakly associated with non-participation, but not enough to be a significant discriminating factor. For both men and women, higher SMSA unemployment rates were associated with increased personal-enrichment relative to career-related education. The SMSA unemployment rate did not help to distinguish between career-entry and career-related education. Finally, the SMSA unemployment rate was not of great use in distinguishing between users of the four sources of adult education. A higher SMSA unemployment rate appeared to contribute weakly to enrollment in "other" educational sources.

In summary, the available data suggest economic benefits were an important consideration in adult-student enrollments. More than half of those responding in the CPS stated their enrollment reasons were employment-related. The role of short-term swings in unemployment rates for motivating adult enrollments is less clear. There was not compelling evidence that temporary unemployment conditions were a major factor in adult-enrollment decisions. It is not clear whether this was related to a lack of perceived relation between education and relief from unemployment or reflected an inability to pay for education.

Limitations to Findings

Several of the original hypotheses for the study could not be directly tested in the analyses that were undertaken because of the unavailability of data. The previously noted lack of information on personal income limited efforts to examine the purchase of education as an investment. Details on the ages and number of children were not included in the study data set, reducing the ability to examine the role of family responsibilities in adult-education attendance decisions. Data on distance and time traveled for adult-education courses were not available, making it infeasible to look directly at the role of convenience in attendance decisions.

Restrictions to the fluctuations in the SMSA educational price variables resulted from the manner by which these variables were derived. These values were estimated from amounts paid by unsubsidized participants. By understating the variability, there is a strong possibility that the importance of these variables to explaining participation may have been reduced.

The personal-enrichment education category was heterogeneous in nature. The category included adults pursuing literacy skills as well as adults involved in general interest and avocational course work. These groups are almost certainly quite different in their characteristics. The ambiguity in the results related to personal enrichment may reflect the pooling of several disparate populations. Similarly, in retrospect, the "other" source category was too broadly defined. In particular, the proprietary schools should have been separated from the non-profit and governmental programs. The former tend to focus on longer, relatively-expensive vocational programs, while the latter tend to offer shorter and less expensive programming.

Implications of Findings

There is a growing volume of literature that argues the importance of adult participation in continuing education to the economic success of the individual and to the country's ability to stay competitive in world markets. Recent examples of these include: Cross and McCartan (1984), Newman (1985), the Commission on Higher Education and the Adult Learner (1984) and Eurich (1985). The rate of technological change and rapid shifts in employment opportunities increasingly will make it mandatory that workers update existing skills or develop new skills multiple times during their work years.

Even more important from a public policy perspective may be the increased evidence of growing gaps between the affluence levels of the upper and lower income individuals and families. Recent studies of individual economic patterns in the United States have shown a growing number of individuals and families trapped at low-income levels with much less opportunity for upward mobility than has been the historical pattern in the United States (Kuttner, 1985). The Philadelphia Commission on the Twenty-First Century (1985) echoed this concern by identifying it as one of the gravest concerns likely to confront Philadelphia over the next decades. A critical factor associated with this entrapment is lack of employment skills for any jobs except those in the lowest paying areas. Participation in formal educational programs is often fundamental to developing higher level employment skills. But, as this research has suggested, those with the least education, lowest skills, and smallest incomes were those that were least likely to participate. Furthermore, the findings for this study have shown that the educational opportunities available to the low-income, low-skills individuals tended to cost more on the average than those available to the better paid, more highly-skilled individual.

Cross (1981) has proposed three categories of barriers to adult educational participation: 1) situational barriers that include such factors as direct and indirect attendance costs, family responsibilities, and level of family support; 2) institutional barriers that include such factors as entry requirements, manner in which course is offered, lack of information about educational opportunities, and length of time to complete program; and 3) dispositional barriers that include personal attitudinal factors such as lack of self-confidence, uncertainty about value of education, and unfavorable attitudes toward the procedures associated with formal study. For interventions at either the institutional or public policy level to succeed, one or more of the above barriers to attendance must be reduced. Flowing from this study are several possible options to address these barriers.

Governmental Policy Suggestions

Government policies at either the national or regional level are typically focused at reducing situational or institutional barriers. Public policy initiatives may include direct or indirect cost subsidization, providing support for the research and development of effective adult programs, coordinating adult-education participation incentives more closely with policy initiatives in other spheres such as poverty and unemployment, and providing an information base that will facilitate decision-making by adults considering educational options. Some specific examples of possible policy initiatives include:

1. The apparent greater price sensitivity of women than men, and the larger probability that women will be required to assume the costs of child care in order to participate in an educational program, means that female enrollments will frequently depend on the availability of child-care support funds. Recognition of childcare as a significant

attendance cost appears to be an important step for both state and federal financial aid initiatives.

2. Career-entry education is likely to provide greater public benefit than either personal or career-enhancement education. Reducing the cost of career-entry education relative to the costs of other types of education through either program cost subsidies to career-entry education providers or through enhanced financial aid options for career-entry students could help achieve increased participation in career-entry education. However, current public policy initiatives are tending to discourage enrollments by individuals most likely to need career-entry education. Low-income and low-status individuals are likely to be discouraged from pursuing education because of the manner in which financial aid is typically awarded: (a) aid is usually not available when only a few credits or non-credit course work is taken; and (b) aid is frequently not available when "other" sources of education are used. The findings for this study indicated that "other" sources were the most important for the less skilled and unskilled worker. Possible solutions to these dilemmas include the changing of financial-aid eligibility requirements for low-income, career-entry students by either requiring less course work to be completed in a given time period and/or by qualifying additional sources of adult education for financial aid.

3. Older adult participation tends to be discouraged for many of the same reasons that low-income, low-skills adult participation is. Some possible policy initiatives include: recognizing that older adults' costs of living are typically higher than traditional-aged students and providing greater financial-aid support, allowing non-credit and non-traditional studies to qualify for financial- aid support, and providing special funding incentives to sources of adult education to develop programs designed to eliminate adult barriers to attendance.

4. Financial aid tends to be only available to adults who have demonstrated academic capabilities. Funding support for developing and delivering programs to the previously unsuccessful student may be required in the future. This could include support for remediation of basic skills and the identification of alternative teaching strategies

for adults. Currently, federal financial-aid policies tend to discourage support for adult participation in any form of remedial education. Pell regulations prohibit the awarding of funds to individuals who are not enrolled in a degree program.

5. State and federal policies frequently disqualify individuals for income-support programs such as low-income-family assistance upon enrollment in educational programs. Public policies thus tend to discourage enrollments by those individuals whose participation could result in the greatest individual and public benefit. If education is to become a viable way to reduce hard-core unemployment and poverty, reductions in public assistance should not be tied to educational participation.

6. The loss of income through unemployment appears in this study's data to have overwhelmed any incentive to participate that unemployment may have created. A public policy incentive to encourage reeducation to eliminate long term unemployment could be made by tying the extension of unemployment benefits to the pursuit of career-related education. Repayment of extended benefits might be handled through supplemental income tax deductions upon reemployment.

7. Additional incentives for business and industry to provide career-entry education to potential employees could be provided. For example, tax incentives for the cost of training could promote more private sector efforts in this area.

8. Some evidence was provided in this study to suggest that adults respond to educational opportunities if there are differences in the earnings and unemployment risks associated with individuals at different education levels. However, national and state data collection efforts do not emphasize the reporting of income and unemployment data by educational level. It is difficult, if not impossible, for an adult to judge the probable value of pursuing additional education. Better information on the relationship between income and education on a regional basis could help convince individuals of the potential value to them in participating.

Higher Education Leadership Implications

Higher education leaders, in either a two-year or four-year college setting, can take actions that will eliminate barriers to attendance in all three areas of the Cross taxonomy. In some respects, because of funding constraints situational barriers related to the direct and indirect costs of attendance may be the most difficult to eliminate. In economic terms this implies that higher education institutions will need to focus on shifting the demand for education in their favor. Opportunities to influence enrollments occur in the following areas: curricular design; admissions and registration procedures and information; support services; and timing and location of offerings. A key consideration is to recognize that the potential adult-student universe reflects many subpopulations with varying needs for educational and personal support services, not all of which can be reasonably provided by any single educational enterprise. For example, an institution with an irrevocable commitment to a broad general education experience for all of its participants cannot expect to participate extensively in offering educational programs to career-enhancement students. A successful planning approach for adult-education delivery will be pluralistic, using different approaches to reach and deliver educational programs to the subpopulations whose educational objectives are consistent with the institutional mission.

1. Business and industry programs are an important factor in adult education, especially in education related to career enhancement. The traditions and approaches followed by higher education are frequently inconsistent with the needs of business and industry. Higher education has the benefits of teaching expertise and facilities geared to on-going educational efforts. It typically lacks the flexibility and responsiveness required by

industry. Access to this segment of the adult-education market will require a collaboration with business and industry and convincing business leaders of the efficiency and effectiveness with which higher education can perform business-related educational efforts.

2. Adult-education programs offered by higher education tend to be taught using instructional approaches that mirror those used in basic and secondary education where the low skills, low income individual has frequently met with little or no success. Less traditional programs offered by higher education tend to be presented and recruited for in ways that make the participant feel inferior to traditional-program students. The entire organizational culture of higher education may be counter-productive for attracting non-active adult learners.

3. Institutional barriers to low skills, less well-educated adults tend to be great. Admission and registration procedures even at "open access" colleges tend to be complex and rely heavily on the ability to follow complex written instructions. Institutional staff are sometimes intolerant of unsophisticated students. Bureaucratic structures tend to be fragmented and designed for the convenience of employee constituents rather than potential new students.

4. The learning styles of "non-active" learners need to be researched to identify instructional strategies that may motivate participation from those not currently active in education. The dependency on traditional lecture modes may need to be lessened. Strategies for converting adults to active learners need to be designed. This may mean that, in order to reduce dispositional barriers, adults without prior higher education should, in their first courses, focus more on developing positive learning attitudes and behaviors than on cognitive skills. However, such orientations to higher education, while common for traditional-age students, are relatively rare in adult-education programs.

5. Proximity to work was found in this study to be an factor related to participation. Other studies have shown a preference by adults to study near their homes. This may mean that many colleges need

to relocate adult courses off-campus near places of work or in residential communities.

6. It may not be possible to reduce indirect costs of education such as transportation and child care by direct subsidy from the college. However, information-sharing approaches such as coordinating car pools or facilitating child-sitting cooperatives may significantly reduce attendance costs.

7. Adult students may not have accurate information on actual costs of courses offered by colleges and may assume higher costs than actually exist. College managers should attempt to insure enrollment decisions are informed ones. Despite costs that are typically higher than public, if not private, higher education, the proprietary sector has been outpacing higher education enrollment growth since the late 1970's (Frances, 1985). Higher education leaders need to explore the factors promoting this growth and their implications.

8. Information promoting adult enrollments should emphasize verifiable economic benefits to participants. Former student outcomes from participation should be described where feasible and appropriate.

9. The dispositional barriers of non-whites and low socio-economic-status individuals need to be examined fully by college leaders. The uncertainties, attitudes, and lack of information reflected in adults with limited formal education should be addressed in designing recruitment, admission, and registration approaches.

10. While recognizing that adult learners in all categories of participants were found enrolled at all possible sources, two-year and four-year colleges do each appear to have unique market niches that could be exploited. For example, two-year colleges are important for career-entry students having worked previously in low skills and office-worker occupational categories. There should be some clear advantages for higher education planners to look closely at the characteristics of adult students who have selected their institution. This may suggest recruitment and programmatic strategies that encourage increased enrollments.

11. Study findings were that higher education had less appeal to older adult students than the other adult-education sources. This may have implications for the mix of courses offered or the manner in which they are delivered. Institutional leaders need to identify campus factors that may discourage older adults from feeling at ease, and eliminate procedures and regulations that discourage older adult enrollments. Planning for career-enhancement and personal-enrichment programs may need to be more age-sensitive than that for career-entry programs.

12. The appropriateness of institutional recruitment strategies to reach targeted adult populations need to be examined. Institutions aspiring to reach less well educated adults may need to examine dependence on standard recruitment procedures. Current documents, such as college catalogues, may be inappropriate to communicate opportunities provided by college programs.

13. The inability of many adults to enroll for standard semester course schedules deserves consideration. A significant factor in the appeal of business and "other" source courses may be the timing and schedule flexibility of the offerings.

14. Higher education program leaders should review the educational expectations of employer-based programs relative to those offered on-campus. A critical question may be whether educational offerings can be redesigned to meet industry and business expectations and still fulfill the college's assumptions regarding the appropriate nature of course work. Some recent studies of differences between corporate and higher education programs have indicated that corporate programs may place a greater emphasis on affective learning than is true in higher education programs (Hahn and Mohrman, 1985). Higher education's role in continuing education may be strengthened if it is prepared to design programs of study for adults that more closely match those of business and industry.

Implications for Further Research

The findings for this study could not address several of the issues suggested by the original research hypotheses. The following are some suggestions for next steps at looking at some of the relationships included in this study:

1. It would be useful to examine the extent to which adults who indicate they are pursuing career-entry education are actually able to use it to enter a new employment field. Secondary research questions to address would include the extent to which students using different sources have variations in their success rates in entering new employment, and the way in which career-entry education interacts with other individual characteristic variables to influence employability.

2. The CPS data do not provide a complete understanding of the price structure that actually exists for adult-education programs. This limited the extent to which price elasticities could be analyzed in this study. A useful research effort would be to identify the actual price structure that exists for adult education programs before and after financial subsidies to students.

3. The concept of "course" in adult education is a vague one. There is tremendous variability in the intensity and length of adult education experience. It would be useful to analyze price sensitivity in the context of more homogeneous course units.

4. The "other" source category used in this study is a broad eclectic one that accounts for half of the adult-education programs. This category should be broken into smaller, more homogeneous units to see the contributions that the various sectors are making to adult education. Of particular interest would be the various sources focusing on adult-literacy programs, and the relative success with which they are able to encourage participation.

5. The role of literacy education in promoting successful entry into the employment market needs to be explored. An important public policy issue is the extent to which any form of adult education can help to resolve hard-core unemployment and poverty conditions.

6. Course and program completion rates for various categories of adult-education participants need to be examined. Among the issues are: Do users of various sources complete courses at differing rates, do some categories of adult users complete courses with greater frequency at one type of source, and do expected economic benefits influence completion rates.

7. The CPS focuses on what adult students did and not why they did it. It would be helpful to recast the questionnaire to learn more about why they chose a particular source of adult education.

In general, the actual relationship between adult education and public policy objectives should be explored more fully. Informal on-the-job training could prove to be more effective in developing worker efficiency and providing them with new skills than more formal course work. A critical issue is whether programs that focus on direct assistance in finding appropriate employment for adults as opposed to education-for-employment are more efficient in addressing public policy issues related to eliminating unemployment and improving worker productivity.

Many writers on higher education (e.g., Bowen, 1978) identify a wide range of public benefits potentially resulting from an individual's pursuit of education distinct from those related to employment. These potential benefits, as they apply to part-time adult students, have not been systematically examined by researchers. Thus it is difficult to make a case for public support of part-time adult education in non-economic terms. It may be fruitful to research the extent which other proposed public benefits are actually achieved through part-time adult education initiatives.

Most outcomes research in higher education is focused on the more traditional, degree-oriented students. If higher education is to succeed in increasing its share of the adult-education market, there is a need to understand

fully the contributions that it makes to adult participants' achievements of their educational and career goals, and the reasons why adults do or do not select higher education over other sources of adult-education programs.

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